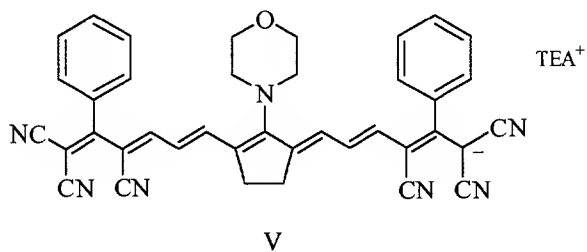
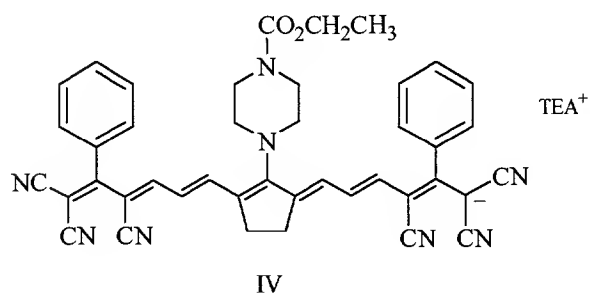
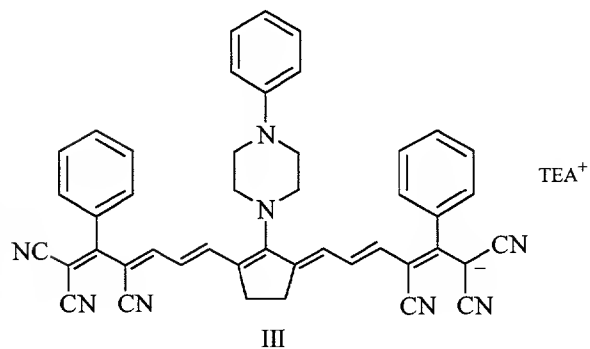
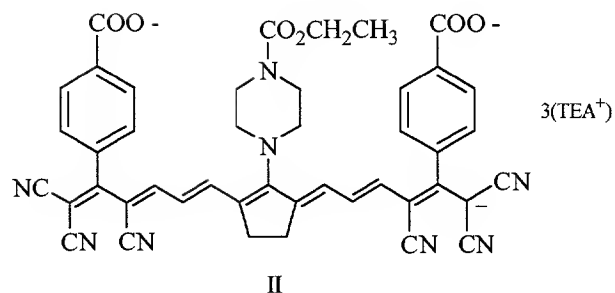
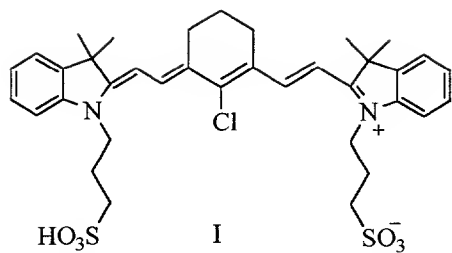


WE CLAIM:

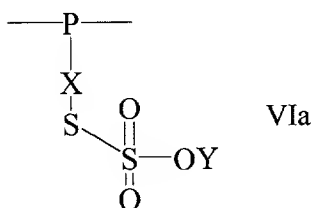
1. A method for producing a printing plate precursor comprising:
 - (a) applying to a substrate a coating composition comprising a photothermal converter and at least one polymer comprising thiosulfate groups to obtain a coating; and
 - (b) applying a water soluble topcoat to the coating.
2. A method for producing a printing plate precursor comprising:
 - (a) applying to a substrate a coating composition comprising a photothermal converter and at least one polymer comprising thiosulfate groups to obtain a coating; and
 - (b) applying a water soluble topcoat to the coating, wherein the water soluble topcoat does not comprise a photothermal converter.
3. The method of claim 1, wherein the water soluble topcoat comprises a water soluble polymer comprising monomeric units selected from the group consisting of amide units, polyoxazoline units, and mixtures thereof.
4. The method of claim 3, wherein the water soluble polymer is selected from the group consisting of poly(N-vinylpyrrolidone), a copolymer of N-vinylpyrrolidone and vinyl acetate, poly(2-ethyl-2-oxazoline), and mixtures thereof.
5. The method of claim 1, wherein the photothermal converter is an infrared dye.
6. The method of claim 5, wherein the infrared dye is selected from the group consisting of compounds I-V, where TEA = triethylammonium:



7. The method of claim 1, wherein the polymer comprising thiosulfate groups has a molecular weight in the range of 1,000 – 1,000,000.

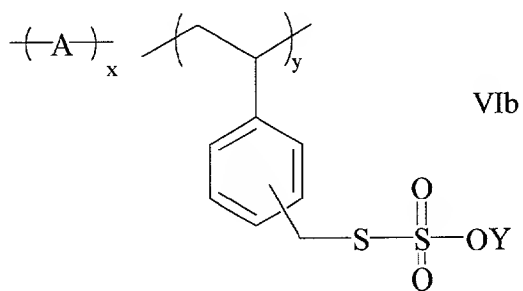
8. The method of claim 1, wherein the number of thiosulfate-containing monomeric units in the polymer comprising thiosulfate groups is from about 10% to about 100% of the total number of monomeric units.

9. The method of claim 1, wherein the polymer comprising thiosulfate groups is the polymer having structure VIa:



wherein P represents a polymeric backbone, X is a divalent linking group, and Y is a hydrogen or a cation.

10. The method of claim 1, wherein the polymer comprising thiosulfate groups is the polymer having structure VIb:



wherein y has a nonzero value, the ratio x:y ranges from 0 to about 9, A is an unsaturated polymerizable comonomer, and Y is a hydrogen or a cation.

11. The method of claim 10, wherein A is selected from the group consisting of acrylates, methacrylates, styrene and its derivatives, acrylamides, methacrylamides, olefins, and vinyl halides, and combinations thereof.

12. The method of claim 1, wherein the coating composition comprises about 1 to about 25 wt % of solids.

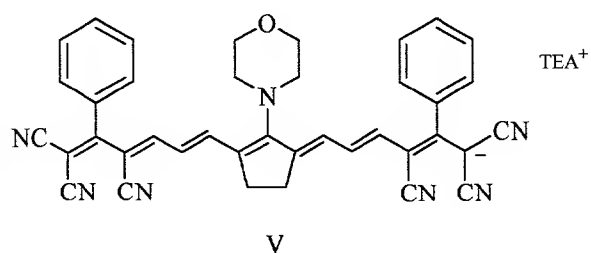
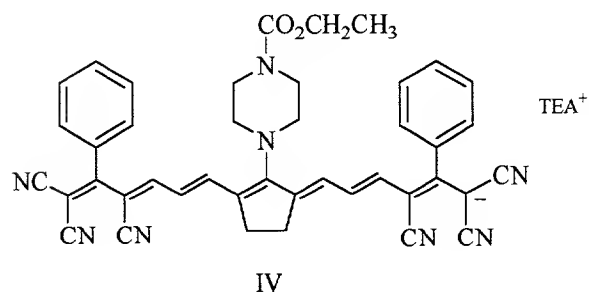
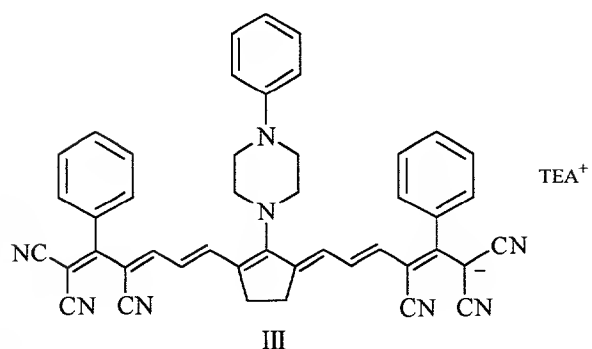
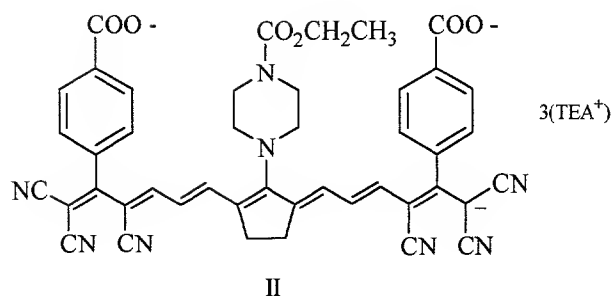
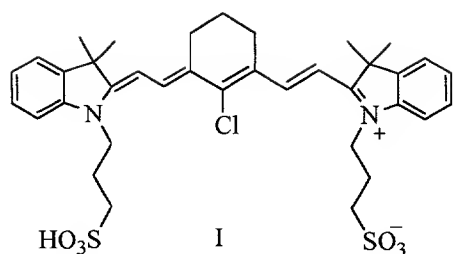
13. The method of claim 1, wherein the coating composition provides a dry coverage of about 10 to about 1000 mg/ft².

14. A method for producing a printing plate precursor comprising applying to a substrate a composition comprising:

- (a) a photothermal converter;
- (b) at least one polymer comprising thiosulfate groups; and
- (c) an additive selected from the group consisting of diazonium, iodonium, copper (I), alkoxy pyridinium and maleimide additives and mixtures thereof.

15. The method of claim 14, wherein the photothermal converter is an infrared dye.

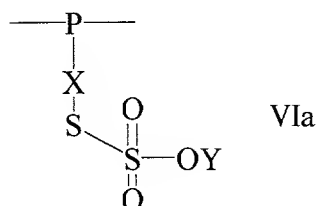
16. The method of claim 15, wherein the infrared dye is selected from the group consisting of compounds I-V, where TEA = triethylammonium:



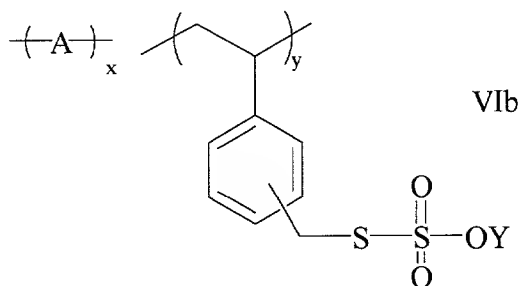
17. The method of claim 14, wherein the polymer comprising thiosulfate groups has a molecular weight in the range of 1,000 – 1,000,000.

18. The method of claim 14, wherein the number of thiosulfate-containing monomeric units in the polymer comprising thiosulfate groups is from about 10% to about 100% of the total number of monomeric units.

wherein y has a nonzero value, the ratio x:y ranges from 0 to about 9, A is an unsaturated polymerizable comonomer, and Y is a hydrogen or a cation.



20. The method of claim 14, wherein the polymer comprising thiosulfate groups is the polymer having structure VIb:



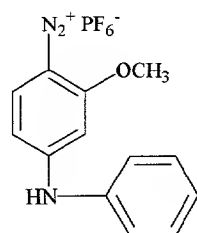
wherein y has a nonzero value, the ratio x:y ranges from 0 to about 9, A is an unsaturated polymerizable comonomer, and Y is a hydrogen or a cation.

21. The method of claim 20, wherein A is selected from the group consisting of acrylates, methacrylates, styrene and its derivatives, acrylamides, methacrylamides, olefins, and vinyl halides, and combinations thereof.

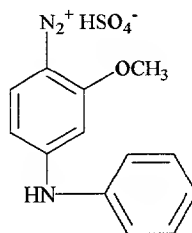
22. The method of claim 14, wherein the coating composition comprises about 1 to about 25 wt % of solids.

23. The method of claim 14, wherein the coating composition provides a dry coverage of about 10 to about 1000 mg/ft².

24. The method of claim 14, wherein the diazonium additive is selected from the group consisting of compounds VII and VIII:

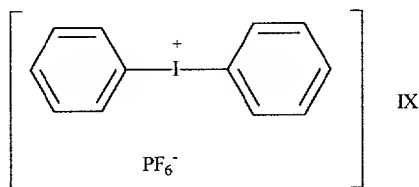


VII



VIII

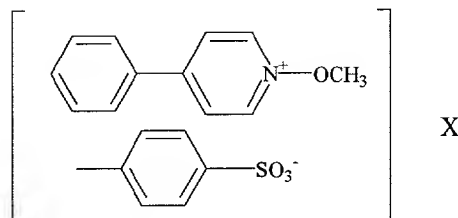
25. The method of claim 14, wherein the iodonium additive is compound IX:



IX

26. The method of claim 14, wherein the copper(I) additive is copper(I) gluconate.

27. The method of claim 14, wherein the alkoxy pyridinium additive is compound X:



28. The method of claim 14, wherein the maleimide additive is N-ethylmaleimide.

29. A printing plate precursor comprising:

- (a) a substrate;
- (b) a coating applied to the substrate, wherein the coating comprises a photothermal converter and at least one polymer comprising thiosulfate groups; and
- (c) a water soluble topcoat residing on the coating.

30. A printing plate precursor comprising:

- (a) a substrate;
- (b) a coating applied to the substrate, wherein the coating comprises a photothermal converter and at least one polymer comprising thiosulfate groups; and

- (c) a water soluble topcoat residing on the coating, wherein the water soluble topcoat does not comprise a photothermal converter.

31. A printing plate precursor comprising:

- (a) a substrate; and
- (b) a coating applied to the substrate, the coating comprising
 - (i) a photothermal converter;
 - (ii) at least one polymer comprising thiosulfate groups; and
 - (iii) an additive selected from the group consisting of diazonium, iodonium, copper(I), alkoxy pyridinium and maleimide additives and mixtures thereof.